

We claim:

- 1 1. ~~A method of format detection for information received over a communication~~
2 system, the method comprising the step of:
3 determining the format of the received information by decoding received
4 information extracted from a defined guiding channel whereby information size values
5 obtained from a defined list of size values for the guiding channel is used in the
6 decoding.
- 1 2. The method of claim 1 where the step of determining the format comprises the
2 steps of:
3 providing a lookup table to store the information size values of the guiding
4 channel and corresponding information size values of other channels of the
5 communication system;
6 extracting received information from the other communication channels;
7 performing decoding operations on the extracted guiding channel information M
8 times where M is an integer that represents a total number of information size values
9 stored in the list;
10 deciding which of the M decoding operations resulted in a correct decode; and
11 determining the format of the received information from the information size
12 value of the guiding channel that yielded the correct decode.
- 1 3. The method of claim 2 where the step of deciding which of the M decoding
2 operations resulted in a correct decode comprises the steps of:
3 performing at least one decode operation on the extracted guiding channel
4 information yielding at least one decode result; and
5 applying the at least one decode result to an algorithm for deciding whether
6 there is a correct decode and which information size value yielded such correct
7 decode.
- 1 4. The method of claim 3 where the communication system is a 3GPP compliant
2 UMTS where the guiding channel is TrCh1 and the decoding operations comprise

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3 convolutional decoding yielding a result on which a tail bit test and CRC decoding are
4 performed whereby each such operation is performed M times.

1 5. The method of claim 4 where the format being determined are transport formats of
2 TrCh2 and TrCh3 based on a format detected for TrCh1.

1 6. The method of claim 4 where the decoding operations yield decoding results that
2 are used in the algorithm to decide the correct decode where the CRC decoding for the
3 i^{th} operation yields a value C_i , and the tail bit test yields values T_i and K_i where i is
4 any integer equal to M or less and whereby

5 (a) $C_i = 1$ indicates a CRC pass;

6 (b) $C_i = 0$ indicates a CRC fail;

7 (c) T_i is an integer value that represent a total number of "1" bits occurring in the
8 tail bits of the convolutional decoding result and further, T_0 is a defined
9 threshold value that is an integer equal to 1 or greater.

10 (d) $K_i = 1$ indicates a tail bit test pass condition where $T_i \leq T_0$; and

11 (e) $K_i = 0$ indicates a tail bit test fail;

1 7. The method of claim 6 where a correct decode is declared when any one of the
2 following conditions occurs from one of the M decoding operations:

3 (a) only one of the decoding operations yielded in a CRC pass;

4 (b) none of the decoding operations yielded a CRC pass, and of these, only one
5 passed the tail bit test;

6 (c) none of the decoding operations yielded a CRC pass, but more than one passed
7 the tail bit test, and of these, only one satisfies the condition $T_i = T_0$;

8 (d) none of the decoding operations yielded a CRC pass, but more than one
9 passed the tail bit test, and of these, only one satisfies the condition $T_i < T_0$;

10 (e) More than one decoding operation yielded a CRC pass, but none passed the
11 tail bit test, and of these, only one satisfies the condition $T_i = T_0 + 1$;

12 (f) More than one decoding operation yielded a CRC pass and passed the tail bit
13 test, but only one of these satisfy the condition $T_i < T_0$;

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- 14 (g) More than one decoding operation yielded a CRC pass, and of these, only one
 15 passed the tail bit test; and
 16 (h) More than one decoding operation yielded a CRC pass and passed the tail bit
 17 test, but only one satisfies the condition $T_i = T_0$.

- 1 8. The method of claim 6 where a BTFD failure is declared when any one of the
 2 following sets of values or conditions occur from at least one of the M decoding
 3 operations:
 4 (a) none of the M decoding operations yielded either a CRC pass or a tail bit test
 5 pass result;
 6 (b) none of the M decoding operations yielded a CRC pass, but more than one
 7 passed the tail bit test and none of these satisfy the condition $T_i = T_0$ condition;
 8 (c) none of the M decoding operations yielded a CRC pass but more than one
 9 passed the tail bit test, and of these, more than one decoding operation yielded
 10 the values $C_i = 0$; $K_i = 1$; $T_i = T_0$;
 11 (d) none of the M decoding operations yielded a CRC pass, but more than one
 12 passed the tail bit test, and of these, more than one yielded values of $C_i = 0$;
 13 $K_i = 1$; $T_i < T_0$;
 14 (e) more than one of the M decoding operations yielded a CRC pass, but none
 15 passed the tail bit test, and of these, none satisfy the condition $T_i = T_0 + 1$;
 16 (f) more than one of the M decoding operations yielded a CRC pass, but none
 17 passed the tail bit test, and of these, more than one yielded the values $C_i = 1$;
 18 $K_i = 1$; $T_i = T_0 + 1$;
 19 (g) more than one of the M decoding operations yielded values of $C_i = 1$; $K_i = 1$;
 20 $T_i < T_0$;
 21 (h) more than one of the decoding operations yielded a CRC pass and a tail bit
 22 pass result, and of these, none satisfy the conditions $T_i < T_0$ or $T_i = T_0$; and
 23 (i) more than one of the decoding operations yielded a CRC pass and a tail bit
 24 test pass result, and of these, more than one yielded values of $C_i = 1$; $K_i = 1$;
 25 $T_i = T_0$.

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